Nevada Division of Environmental Protection
Bureau of Water Pollution Control
Underground Injection Control Program
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PERMIT FACT SHEET

UIC General Permit for Long-Term Remediation (more than six months) - #GU07RL001

Permit Name

UIC General Permit for Long-Term Remediation (more than six months)

a. up to 4% hydrogen peroxide (H_2O_2);
b. Oxygen Release Compound (ORC®) and/or ORC-Advanced®;
c. Hydrogen Release Compound (HRC®) Primer and/or HRC®; and/or
d. sodium thiosulfate to dechlorinate potable water used for injection.

Who must apply?

Pursuant to NRS 445A.465, except as authorized by a permit, it is unlawful for any person to inject fluids through a well into any waters of the state (aquifer) and discharge from a point source a pollutant or inject fluids through a well that could be carried into the waters of the state by any means (including the unsaturated zone above waters of the state).

NAC 445A.849, defines a Class 5 well to include injection wells used to inject fluids for the chemical or microbiological treatment of contaminated groundwater or soil.

How long is the permit valid?

All UIC Permits are issued for a 5 year time period. Coverage under the UIC General Permit starts when the application is approved and the permit is issued with an individual identification number. The UIC General Permit will be renewed by the UIC Program every 5 years. Coverage under the General Permit will continue without need for renewal until a Permittee submits a *Notice of Termination (NOT)-Form U310*.

EPA Well Code

5X26 Aquifer Remediation Related Wells (including subsurface fluid distribution systems)

Synopsis

Applicants or existing Permittees may include owners of gasoline stations and leaking underground storage tanks (LUST) due to release of petroleum hydrocarbons to groundwater. The primary Contaminants of Concern (COCs) include benzene, toluene, ethylbenzene, total xylenes (BTEX) and/or methyl tert butyl ether (MTBE).

Injection of up to a 4 % solution of hydrogen peroxide, Oxygen Release Compound (ORC®), and/or ORC-Advanced® serves as an oxygen source for microbes in the subsurface to enhance biodegradation of these contaminants. The active ingredient in ORC-Advanced® is phosphate-intercalated magnesium peroxide.

Other applicants may include industries that utilize chlorinated solvents (including auto repair shops and dry cleaners). The primary COCs may include tetrachloroethene (PCE); trichloroethene (TCE); 1,2-dichloroethene (1,2-DCE); and vinyl chloride (VC). Hydrogen Release Compound (HRC®) Primer and/or HRC® are used for anaerobic reductive dechlorination. This is a degradation reaction in which bacteria gain energy and grow as one or more chlorine atoms on a chlorinated hydrocarbon are replaced with hydrogen. The active ingredients in HRC® Primer are glycerol tripolylactate and lactic acid.

Injection Limitation for Product

In order to prevent contamination from spreading, injection will not be allowed into wells that have any observance of Light Non-Aqueous Phase Liquid (LNAPL or "free product") or Dense Non-Aqueous Phase Liquid (DNAPL) within the last 3 months at the site. The State of Nevada Action Level for free product is ½ inch.

A groundwater remediation Workplan will be required, and the Letter of Concurrence by the Bureau of Corrective Action's or District Health Department's Case Officer is required prior to issuance of the UIC General Permit. The UIC General Permit for Long-Term Remediation will require monitoring to verify that the injection activities are not causing the free phase and dissolved phase contamination to migrate. At least 3 downgradient wells will be required to be monitored on a quarterly basis for the COCs.

Injection Volume Limitations

The UIC General permits for remediation allow the following injection volumes for (up to) 4% hydrogen peroxide (H_2O_2):

- a maximum injection of 325 gallons per well per month;
- a maximum injection of 7,600 gallons per quarter per site; and
- a maximum injection of 1,000 gallons per month into an open excavation or injection gallery.

These limitations were established following a statistical analysis of 64 UIC permits in April of 2004 that utilize up to 4% H_2O_2 for injection. The maximum injection volumes were established so that 95% of the existing permits met the criteria. For those projects that require additional volumes, an UIC UNEV permit will be required.

Injection volume limitations were not established for ORC® or HRC®. The injection volume will be determined on a site-specific basis that will require concurrence by the Case Officer.

Drinking Water Standards

Federal and State Drinking Water Standards and State Action Levels are used as the remediation standards for all UIC permits.

Constituent	Drinking Water Standard
Benzene	5 ppb (State and Federal Limit)
Toluene	1,000 ppb (State and Federal Limit)
Ethylbenzene	700 ppb (State and Federal Limit)
Xylenes (total)	10,000 ppb (State and Federal Limit)
MTBE	20* or 200 ppb (Site Specific Target Level)
PCE	5 ppb (State and Federal Limit)
TCE	5 ppb (State and Federal Limit)
cis-1,2-dichloroethene	70 ppb (State and Federal Limit)
Vinyl chloride	2 ppb (State and Federal Limit)
Non-Aqueous Phase Liquid	½ inch of free product (State Limit)

* The Site Specific Target Level for MTBE is 20 ppb when sensitive receptors are located within 1,000 feet of the site.

Procedures for Public Comment

The Notice of the Division's intent to issue the UIC General Permit for Long-Term Remediation (more than six months) authorizing the facility to inject specific compounds into the groundwater of the State of Nevada will be sent to newspapers

throughout the state including the Elko Daily Free Press, Humboldt Sun, Las Vegas Review Journal, Nevada Appeal, and the Reno Gazette Journal.

The notice will be mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of 30 days following the publication date of the said public notice. The comment period can be extended at the discretion of the Administrator. All written comments received during the comment period will be retained and considered in the final determination.

A public hearing on the proposed determination can be requested by the applicant, any affected state, any affected interstate agency, the regional administrator of EPA Region IX or any interested agency, person or group of persons.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Proposed Determination

The Division has made the tentative determination to issue the UIC General Permit for Long-Term Remediation for five years.

Proposed Limitations and Special Conditions for Long-Term Remediation

TABLE 1

PARAMETER	FREQUENCY	LOCATION	LIMITATIONS
Free-phase Hydrocarbon Product (LNAPL) Thickness and/or DNAPL	Quarterly **(include all observations during the quarter)**	All injection and monitoring wells	Monitor and Report. **Injection shall not occur in a well that has had free product (LNAPL and/or DNAPL) during the previous 3 months.**
Groundwater Elevation (amsl) and Depth to Groundwater	Quarterly	All injection and monitoring wells	Monitor and Report
Hydrogen Peroxide, ORC®, HRC® and/or Sodium thiosulfate: Concentration or Mass, Volume, Date Injected	Each injection event	All injection wells	Up to a 4 % H_2O_2 solution - maximum of 325 gallons/well per month and maximum of 7,600 gallons/quarter per site. **Injection shall not occur in a well that has had free product (LNAPL and/or DNAPL) during the previous 3 months.**
Hydrogen Peroxide, ORC®, HRC® and/or Sodium thiosulfate: Concentration or Mass, Volume, Date Injected	Each injection event	Open excavation or injection gallery	Up to 1,000 gallons of 4 % H_2O_2 solution per month for a maximum of 7,600 gallons per quarter per site.
Benzene, Toluene, Ethylbenzene, total Xylenes (BTEX), and Methyl Tertiary Butyl Ether (MTBE) by EPA Method 8260B	Quarterly **if required** (Samples shall be taken no sooner than 30 days following H_2O_2 injection event)	At least 3 downgradient wells **(a transect of 3 down- gradient monitoring wells at the leading edge of the plume perpendicular to the flow is preferred)** identified on page 1.	Monitor and Report
Extended list of Volatile Organic Compounds (66 compounds) by EPA Method 8260B	Quarterly **if required** (Samples shall be taken no sooner than 30 days following H_2O_2 injection event)	At least 3 downgradient wells **(a transect of 3 down- gradient monitoring wells at the leading edge of the plume perpendicular to the flow is preferred)** identified on page 1.	Monitor and Report
Dissolved Oxygen and pH	Quarterly	At least 3 downgradient wells **(a transect of 3 down- gradient monitoring wells at the leading edge of the plume perpendicular to the flow is preferred)** identified on page 1.	Field Measurements Monitor and Report

Rationale for Permit Requirements

The permit conditions will help to ensure that the injectate does not adversely affect the existing water quality or hydrologic regime.

Prepared by: Becky E. Linvill
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